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09/877,159	06/08/2001	David M. Baggett	09765-011002	1014
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FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN .55440-1022			MOONEYHAM, JANICE A	
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			3629	

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09/877 159

EXAMINER
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ART UNIT	PAPER
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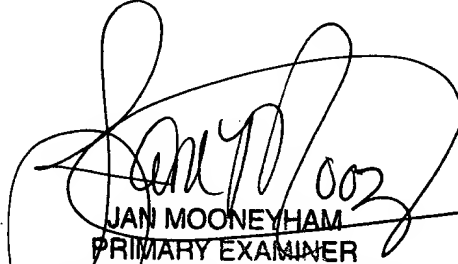
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Commissioner for Patents

Attached is the IDS filed on 10/6/03 with 1449 submitted by prior Examiner initialed.

Attached is supplemental Examiner Answer with missing heading 11 regarding Related Proceeding(s) Appendix inserted .

  
JAN MOONEYHAM  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 3600

## EXAMINER'S AMENDMENT



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### BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/877,159  
Filing Date: June 08, 2001  
Appellant(s): BAGGETT, DAVID M.

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Denis G. Maloney  
For Appellant

### EXAMINER'S ANSWER

This is in response to the appeal brief filed July 25, 2006 appealing from the Office action mailed October 11, 2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

20020178034                      Gardner et. al.                      11-2002

ATPCO Construction Manual dated May 22, 1995

Applicant's admitted prior art on pages 1 and 2 of the specification.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-46 and 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al (US 2002/0178034) (hereinafter referred to as Gardner) in view of applicant's remarks on page 1 of the specification wherein the applicant states that the fare construction process solves the problem by providing a mechanism to extend a published fare with add-ons, also called arbitraries, in order to derive prices to minor cities and ATPCO Construction Manual of date May 22, 1995 (hereinafter referred to as ATPCO).

Referring to Claims 1, 14, 22, 35 and 43-46:

Gardner discloses a method, system and medium for producing a constructed fare that include an add-on added to a published fare, said method executed in a

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computer system having memory, processor and a persistent storage (Figures 1-10 and paragraph [0038]), comprising:

per-processing by:

determining interior (minor) cities that appear with gateway (major, HUB) cities in arbitraries for an airline, the fares being published amounts and an order set of two cities that extend published fares that include an amount for travel between two cities to provide a bi-directional market (page 1 of the applicant's specification, Figure 7 of Gardner, Unpublished Fare Retrieval, Published Fare Retrieval, page 7, [0093-0102]; and

searching a database having published fares for gateway (major, HUB) cities corresponding to the determine interior (minor) cities appearing in the fares (Gardner Figure 7b – 8a, page 7 [0095-0097]); and

producing the constructed fare (Fig. 8a), page 7 [0097), by:

applying an fare corresponding to one of the interior (minor) cities to a published fare involving one of the gateway (major, HUB) cities that corresponds to the determined interior (minor) cities appearing in the fares to produce a constructed fare (page 7 [0095-0098]); and

storing the constructed fare in memory or the persistent storage device of the computer system for use in a travel related activity (pages 7 and 8, [0093-0104], Fig. 8a).

Gardner discloses published fares and unpublished fares. A published fare is defined in APTCO as an amount published for use in pricing air transportation from one

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city to another city. This would include gateway cities and minor cities. An unpublished fare is the combination of an add-on amount and a published fare amount resulting in an amount used in pricing air transportation from one city to another city. Unpublished fares are also referred to as "through fares," "constructed fares" and "behind point fares." page 58 of ATPCO. Gardner does not explicitly disclose arbitrary fares.

However, ATPCO discloses arbitrary fares as an amount published for use only in combination with other fares for the construction of through fares, also referred to as "proportional fare," "basing fare" or "add-on fare (page 58)." ATPCO also discloses add-ons or arbitrary fares as being bidirectional and that the first city displayed is the gateway (page 60). ATPCO further discloses add-on plus published fare equals unpublished or constructed fares (page 58).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate arbitrary fares as taught by ATPCO with the published fares as taught by Gardner since Gardner discloses unpublished fares which is an add-on amount and thus an arbitrary for the purpose of providing better passenger service.

Referring to Claim 52:

Gardner discloses a method for producing a constructed fare and a published fare, said method executed in a computer system having memory and a persistent storage, the method comprising:

per-processing by:

accessing a first hash table by airline interior city pair to return a list of gateway cities with specific interior city, and

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accessing a second hash table by airline gateway pair to return a second list of gateway cities that an airline publishes fares from to determine a gateway to another gateway city (Fig. 7b):

producing the fares, by:

applying the add-on from the first hash table to the published fares from the second hash table to return a list of potential constructed fares (page 7 [0093] thru page 8 [0104]); and

determining whether a constructed fare in a list of constructed fares is a valid constructed fare and for valid ones of the potential constructed fares producing the constructed fares (page 7 [0093] thru page 8 [0104]; and

storing the constructed fare use in a travel related activity (Fig. 8a).

Gardner discloses published fares and unpublished fares. A published fare is defined in APTCO as an amount published for use in pricing air transportation from one city to another city. This would include gateway cities and minor cities. An unpublished fare is the combination of an add-on amount and a published fare amount resulting in an amount used in pricing air transportation from one city to another city. Unpublished fares are also referred to as "through fares," "constructed fares" and "behind point fares." page 58 of ATPCO. Gardner does not explicitly disclose arbitrary fares.

APTCO discloses arbitrary fares as an amount published for use only in combination with other fares for the construction of through fares, also referred to as "proportional fare," "basing fare" or "add-on fare (page 58)."



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Thus, Gardner discloses constructed fares (unpublished fare) which is the combination of an add-on or arbitrary and a published amount.

Referring to Claims 2 and 23:

Gardner further discloses a method and medium wherein determining the interior cities comprises:

accessing a hash table indexed by an airline, interior-city pair to return a list of gateway cities for which an airline has arbitraries (add-on fares) that specify the interior city (Fig. 7b and page 7 [0093] thru page 8 [0104]).

Referring to Claims 3, 6, and 24:

Gardner discloses a method and medium wherein accessing a hash table returns the list in constant time (Fig. 7b-8a).

Referring to Claims 4 and 25:

Gardner discloses a method and medium wherein searching for gateway cities comprises:

accessing a hash table indexed by an airline, gateway pair to return a list of gateway cities that an airline publishes fares from the determined gateway to another gateway city (Figure 7b and page 7 [0093] thru page 8 [0104]).

Referring To Claims 5, 21, 26, and 42:

Gardner discloses the method and medium wherein determining interior cities comprises:

accessing a first hash table indexed by an airline, interior-city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city; and wherein searching for gateway cities further comprises:

accessing a second hash table indexed by an airline, gateway pair to return a second list of gateway cities that an airline publishes fares from the determined gateway to another gateway city (Fig. 7b, pages 7 thru 8 [0093-0104]).

Referring to Claim 27:

Gardner discloses a method and medium wherein accessing the first and second hash table returns the list in constant time (Fig. 7b and page 7 [0093] thru page 8 [0104]).

Referring to Claims 7, 19, 28 and 40:

Gardner discloses a method and medium wherein applying arbitraries further comprises:

evaluating or testing records from fare construction tables to determine whether the constructed fare is a valid constructed fare (page 7 [0093] thru page 8 [0104]).

Referring to Claims 8 and 31:

Gardner discloses a method and medium wherein the method is conditioned to allow any one or more of an airline code, interior city, a first gateway city, a second gateway city, or fare-base to vary ( pages 7 thru 8).

Referring to Claims 9, 20, 29, and 41:

Gardner discloses a method and medium wherein testing entries further comprises: determining if an entry in a construction table was memorized before accessing the construction table; and

if the entry was memorized, retrieving an answer for a store of memorized entries to apply to the constructed fare (Fig. 8a (retrieve fare component)).

Referring to Claims 10, 15, 30 and 36:

Gardner discloses a method and medium wherein the constructed fare is a two component constructed fare (page 7 [0101]).

Referring to Claims 11, 16-18, 32, 37-39 and 54-55:

Gardner discloses a method and medium further comprising:

determining a second set of interior cities that appear with a second gateway city in the published fare for the airline (Fig. 7a, Fig. 8a);

applying an arbitrary (add-on) that extends the published fare to a city from the second set of interior cities to produce a three component constructed fare (Fig. 7a, Fig. 8a, pages 7 and 8).

Referring to Claims 12 and 33:

Gardner discloses a method and medium wherein the method is performed over all determined interior cities and all gateway cities that correspond to the determine interior cities appearing in the arbitraries to produce plural constructed fares (pages 7 and 8).

Referring to Claim 13 and 34:

Gardner discloses a method and medium wherein the method is performed over all airlines (Figs. 1-3 and 7b-8a).

## **(10) Response to Argument**

### **Obviousness**

Applicant argues that even if the cited references show the various elements suggested by the Examiner, in order to support a conclusion that it would have been obvious to combine the cited references, the references must either expressly or impliedly suggest the claimed combination or the Examiner must present a convincing line of reasoning as to why one skilled in the art would have found the claimed invention obvious in light of the teachings of the references.

The Examiner asserts that the Examiner has provided such line of reasoning as will be set forth below.

## **DISCUSSION**

### **Background**

The applicant provides the following excerpts from the specification as background of the invention and refers to these as applicant's admitted prior art. The Examiner incorporates these same excerpts into the Examiner's analysis and interpretation of the claim language.

[0002] Airlines publish fares for various markets. A market is a city pair such as NYC-PAR (New York-Paris). For markets involving major cities like the NYC-PAR market, airlines provide published fares, that is, stated prices for travel between the two cities. For markets involving minor cities, however,

the airlines rely on a process called fare construction to produce fares that are sometimes called "constructed fares." Fare construction is particularly used for minor markets involving international travel.

[0003] In the NYC-PAR market there may be hundreds of published fares with corresponding rules to combine the fares. However, there are too many markets for airlines to actually publish fares for every single market. For example, for the OME-NCE (Nome, Alaska/Nice, France) market, there may not be a published fare because the Nome-Nice market may be too small for airlines to actually publish fares. Nevertheless, the airlines need to be able to offer some price for an OME-NCE ticket. The fare construction process solves this problem by providing a mechanism to "extend" a published fare with add-ons also called arbitraries, in order to derive prices to minor cities. An arbitrary, like a published fare, lists two cities. However, unlike cities in a published fare (which establish a bidirectional market), the cities in an arbitrary are ordered: the first is the gateway (or major) city, and the second is the interior (or minor) city. Constructed fares can be either two-component constructed fares, i.e., one arbitrary combined with one published fare or three-component constructed fares, i.e., two arbitraries combined with one published fare. Examples of two-component constructed fares include

OME-NYC arbitrary+NYC-PAR fare=OME-PAR fare

NYC-PAR fare+PAR-NCE arbitrary=NYC-NCE fare

[0004] As the examples show, the arbitrary can be added to either end of the published fare. A three-component constructed fare is shown below, where arbitraries are added to both sides of the published fare

OME-NYC arbitrary+NYC-PAR fare+PAR-NCE arbitrary=OME-NCE fare

[0005] In general, two-component constructed fares provide prices between a minor city and a major city, while three-component constructed fares provide prices between two minor cities.

[0006] One approach used to fare construction is to use a list of constructed fares called "The Unpublished Fares Product" that is available from Airline Tariff Publishing Company (ATPCO). ATPCO is an intermediary that maintains fares published by airlines and resellers. With "The Unpublished Fares Product" a cross-product of all arbitraries and all base fares is determined and provided into a list. That list can contain millions of constructed fares.

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[0007] In addition, there are rules that govern the fare construction process, many of which date back to times when fare construction was performed by hand on paper. In particular, not all arbitraries can combine with all fares; various table-driven compatibility checks are performed to verify that a particular combination is acceptable.

**Claims 1-46 and 52-53 are neither described nor suggested by the combination of Gardner and Applicant's admitted prior art and ATPCO published May 22, 2995.**

**Claims 1, 7, 10, 13, 22, 28, 30, 31, and 34**

Applicant states that for purposes of this appeal only, claims 1, 7, 10, 13, 22, 28, 30, 31 and 34 stand or fall together and that claim 1 is representative of this group of claims.

Claim 1 is directed to the following:

A method of producing constructed fares that includes an arbitrary added to a published fare, said method executed in a computer system having a memory and a persistent storage device, the method comprising:

preprocessing by:

determining interior cities that appear with gateway cities in arbitraries for the airline; the arbitraries being published amounts and an order set of two cities that extend published fares that include an amount for travel between two cities to provide a bi-directional market; and

searching a database having published fares for gateway cities corresponding to the determined interior cities appearing in the arbitraries; and

producing the constructed fare by:

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applying an arbitrary corresponding to one of the interior cities to a published fare involving one of the gateway cities that corresponds to the determined interior cities appearing in the arbitraries to produce a constructed fare; and

storing the constructed fare in memory or the persistent storage device of the computer system for use in travel planning, faring and/or pricing.

In interpreting and analyzing claim 1, the Examiner used to the applicant's background which applicant has admitted is prior art to provide guidance and direction in interpreting the terms of the claim language. The Examiner also looked to the prior art supplied by applicant which was Construction Processing Logic published on April 9, 1992, Airline Tariff Publishing Company (ATPCO) construction processing logic published September 15, 1994, and the prior art supplied by the Examiner, Airline Tariff Publishing Company Construction Manual published May 22, 1995 to provide guidance in interpreting claim language.

Thus, the Examiner interpreted claim 1 in the following manner:

Gardner discloses a method, system and medium for producing a constructed fare that include an add-on added to a published fare, said method executed in a computer system having memory, processor and a persistent storage (Figures 1-10), comprising:

per-processing by:

determining interior (minor) cities that appear with gateway (major, HUB) cities in arbitraries for an airline, the fares being published amounts and an order set of two cites that extend published fares that include an amount for travel between two cities to

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provide a bi-directional market (page 1 of the applicant's specification, Figure 7 of Gardner, Unpublished Fare Retrieval, Published Fare Retrieval, page 7, [0093-0102]) ;  
and

searching a database having published fares for gateway (major, HUB) cities corresponding to the determine interior (minor) cities appearing in the fares (Gardner Figure 7b – 8a, page 7 [0095-0097]); and

producing the constructed fare (Fig. 8a), page 7 [0097], by:

applying a fare corresponding to one of the interior (minor) cities to a published fare involving one of the gateway (major, HUB) cities that corresponds to the determined interior (minor) cities appearing in the fares to produce a constructed fare (page 7 [0095-0098]); and

storing the constructed fare in memory or the persistent storage device of the computer system for use in a travel related activity (pages 7 and 8, [0093-0104], Fig. 8a).

Gardner discloses searching databases for Published and Unpublished Fares.

A published fare is defined as an amount published for use in pricing air transportation from one city to another city (See ATPCO Principle of Fare Construction and applicant's specification, pages 1-2).

An arbitrary is defined as an amount published for use only in combination with other fares for the construction of through fares. An arbitrary is also called an add-on fare (See ATPCO Principle of Fare Construction and applicant's specification, pages 1-2) .



An unpublished fare is a combination of an add-on amount and a published fare amount resulting in an amount used in pricing air transportation from one city to another city. Unpublished fares are also referred to as "through fares," constructed fares," and "behind point fare". Unpublished fares are constructed as follows (see ATPCO Principle of Fare Construction and applicant's specification pages 1-2):

Add-on + published fare = unpublished fare

Published fare + add-on = unpublished fare

Add-on + published fare + add-on = unpublished fare

The applicant's specification states that a gateway is a major city and an interior city is a minor city (page 1).

Figure 7a of Gardner discloses Unpublished Fares (214), Unpub Fare Rtrv/Val (194), ATPCo Rule (216) Published Rule Rtrvl./Val. (196), Unpub Rule Rtrv/Val. (198), and Unpub Rules (218).

Figure 7b discloses Fare Component Identification – create groups of possible fare components; retrieval of all possible unpublished fare components; published and unpublished fare retrieval.

Gardner further discloses the following:

[0096] Fare component identification module 184 identifies possible trip components within an itinerary. **This is done by grouping the itinerary segments together in different ways to form possible fare components.** Furthermore, fare component identification module 184 prevents illogical components from being generated.

[0097] Trip construction identification module 186 identifies all possible combinations of trip constructions that, when combined, can be used to price all specified travel. This process will produce pricing entities (not shown), each

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describing a different combination of logical trip constructions that may produce the lowest ticket price.

[0098] For each component identified, pricing services driver 180 typically will seek to determine the unpublished fare for the component. This process typically involves retrieving the agreements and calling unpublished footnote retrieval/validation module 190. After doing this, the unpublished fare is retrieved using unpublished fare retrieval/validation module 194. Next, the published routings retrieval/validation module 196 is called. Additionally, the process returns an array of unpublished fares.

[0099] Similarly, pricing services driver 180 can determine the published fares for the components. Typically, this can be accomplished by calling retrieve local published fares module 188. Retrieve local published fares module 188 will retrieve published local fares and add all qualifying round-trip and one-way fares to the fares array.

[0100] The process continues by calling published footnote retrieval and validation module 190. This module will apply footnote restriction against the travel dates. Furthermore, the process will call published routings retrieval and validation module b192 to apply routings restrictions against the itinerary. After this process is completed, **an array of published fares is returned.**

[0101] By following these processes, the pricing services driver 180 can create a separate published and unpublished fares array for each component within a pricing entity (not shown). Previously, fares arrays were only unique within each component. Now they will be unique by component, within each pricing entity. This is necessary as a fare's validity depends directly on the construction to which it belongs. For example, a round-trip fare from Chicago to Minneapolis-St. Paul can be valid if the construction is a 2 component construction which commences, for example, on Feb. 3, 1995. It is possible for the same fare to be invalid if included in a 3 component construction which commences on, for example, Jan. 25, 1995.

[0102] Pricing services driver 180 will also perform published rules validation. Typically, this involves perform a data translation service that maps to a nested format which published rules retrieval/validation module is expecting. Typically, for each fare pricing services driver 180 will process the following steps asynchronously. Initially, the module will retrieve or validate the published rules by calling published rules retrieval/validation module 196. Published rules retrieval/validation module 196 validates published rule restrictions. Perform data translation service (not shown) will map nested the published rule restrictions from rules to flat PSD data structures, for example, map fares.

Gardner discloses searching databases for published fares and unpublished fares. A published fare is defined in ATPCO as an amount published for use in pricing air transportation from one city to another city. An unpublished fare is the combination of an add-on amount and a published fare amount resulting in an amount used in pricing air transportation from one city to another city. Unpublished fares are also referred to as "through fares," "constructed fares" and "behind point fares" (page 58 of ATPCO). The Examiner asserts that Gardner does not explicitly disclose arbitrary fares but combined Gardner with ATPCO and the applicant's admitted prior art to reject the claim.

ATPCO discloses arbitrary fares as an amount published for use only in combination with other fares for the construction of through fares, also referred to as "proportional fare," "basing fare" or "add-on fare (page 58)." ATPCO also discloses add-ons or arbitrary fares as being bidirectional and that the first city displayed is the gateway (page 60). ATPCO further discloses add-on plus published fare equals unpublished or constructed fares (page 58). Applicant discloses in the specification that the cities in an arbitrary are ordered, the first is the gateway (or major) city, and the second is the interior (or minor) city (page 1 of the specification). Thus, the Examiner asserts that determining interior cities that appear with gateway cities in arbitraries would be looking for the gateway cities that are listed with the interior cities and searching a database for such would be an add-on inquiry as disclosed in ATPCO (page 60 (D)).

ATPCO further discloses a gateway inquiry (page 16) in which it is disclosed that every carrier, regardless whether they construct, has to have the gateway table current because the arbitrary edit checks for valid gateways. If it is not in the table, the arbitrary will not edit.

Applicant's background in the specification (page 2) states that:

[0006] One approach used to fare construction is to use a list of constructed fares called "The Unpublished Fares Product" that is available from Airline Tariff Publishing Company (ATPCO). ATPCO is an intermediary that maintains fares published by airlines and resellers. With "The Unpublished Fares Product" a cross-product of all arbitraries and all base fares is determined and provided into a list. That list can contain millions of constructed fares.

Thus, Gardner in combination with applicant's admitted prior art and ATPCO disclose the limitation of claim 1.

Gardner discloses published and unpublished fares (Figures 7a and 7b).

Applicant admits that an arbitrary is an add-on used to derive prices to minor cities. Applicant admits that an arbitrary, like a published fare list two cities and the cities are ordered, the first being the gateway (page 1 of applicant's specification) and the second being the interior (or minor) city. Therefore, as disclosed in ATPCO, the gateway is searched for because the arbitrary edit checks for valid gateways and if the gateway is not in the table, the arbitrary will not edit (page 16 of ATPCO). ATPCO further discloses that compatible published and arbitrary (addon) components are grouped together by the market/fareclass of the unpublished record they may construct and that every possible constructed record will be attempted (page 63). The step of applying an arbitrary to a published fare to arrive at an unpublished or constructed fare is disclosed in ATPCO (page 58).

The Examiner thus asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate arbitrary fares as taught by ATPCO with the published fares as taught by Gardner since Gardner discloses unpublished fares which is an add-on amount and thus an arbitrary for the purpose of providing better passenger service.

The applicant states that the Examiner equates gateways with (major, HUBs) cities but does not provide any based for their equivalence. The Examiner respectfully directs the applicant to page 1 of the specification wherein applicant states:

An arbitrary, like a published fare, lists two cities. However, unlike cities in a published fare (which establish a bidirectional market), the cities in an arbitrary are ordered: the first is the **gateway (or major) city**, and the second is the interior (or minor) city.

Applicant states that applicant's admitted prior art in the background neither describes nor suggests the preprocessing that determines interior cities that appear with gateway cities. While applicant's specification discloses fare construction and discloses the terms gateway, interior cities and arbitraries, the applicant asserts that nothing in applicant's background can be construed to suggest, much less describe, the recited preprocessing by determining interior cities that appear with gateway cities in arbitraries for an airline or the feature of searching a database having published fares for gateway cities corresponding to the determined interior cities appearing in the arbitraries.

The Examiner respectfully disagrees with the applicant. Applicant's specification discloses:

[0003] In the NYC-PAR market there may be hundreds of published fares with corresponding rules to combine the fares. However, there are too many markets for airlines to actually publish fares for every single market. For example,

for the OME-NCE (Nome, Alaska/Nice, France) market, there may not be a published fare because the Nome-Nice market may be too small for airlines to actually publish fares. Nevertheless, the airlines need to be able to offer some price for an OME-NCE ticket. The fare construction process solves this problem by providing a mechanism to "extend" a published fare with add-ons also called arbitraries, in order to derive prices to minor cities. An arbitrary, like a published fare, lists two cities. However, unlike cities in a published fare (which establish a bidirectional market), the cities in an arbitrary are ordered: the first is the gateway (or major) city, and the second is the interior (or minor) city. Constructed fares can be either two-component constructed fares, i.e., one arbitrary combined with one published fare or three-component constructed fares, i.e., two arbitraries combined with one published fare. Examples of two-component constructed fares include

OME-NYC arbitrary+NYC-PAR fare=OME-PAR fare

NYC-PAR fare+PAR-NCE arbitrary=NYC-NCE fare

[0004] As the examples show, the arbitrary can be added to either end of the published fare. A three-component constructed fare is shown below, where arbitraries are added to both sides of the published fare

OME-NYC arbitrary+NYC-PAR fare+PAR-NCE arbitrary=OME-NCE fare

[0005] In general, two-component constructed fares provide prices between a minor city and a major city, while three-component constructed fares provide prices between two minor cities.

MPEP 2111 requires that claims be given the broadest reasonable interpretation consistent with the supporting description. However, the claim must be interpreted in light of the specification without reading limitations into the claim.

Thus, a broadest reasonable interpretation of the first limitation, determining interior cities that appear with gateway cities in arbitraries, would be determining Nome, Alaska appearing with the gateway city of NYC and the arbitrary would be OME-NYC arbitrary + the NYC-PAR fare (pages 1 and 2 of applicant's specification).

Applicant argues that Gardner merely describes a system that can access published fares and unpublished fares but offers no techniques for construction of the unpublished fares. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The applicant states that the Examiner, relying on page 58 from ATPCO, argues that: "A published fare is defined in ATPCO as an amount published for use in pricing air transportation from one city to another city." Applicant then states that applicant does not dispute this. However, the applicant disputes the Examiner's statement that a published fare could include a gateway city and a minor city. The Examiner asserts that unless a published fare is identified as precluding minor cities, that a reasonable interpretation of transportation from one city to another city would include all cities, gateway and minor cities.

The applicant further argues Gardner has no relevance to fare construction. The Examiner disagrees and directs the applicant to Figure 7b Fare Component Identification and paragraph [0096] wherein Gardner discloses:

[0096] Fare component identification module 184 identifies possible trip components within an itinerary. This is done by grouping the itinerary segments together in different ways to form possible fare components. Furthermore, fare component identification module 184 prevents illogical components from being generated.

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The applicant argues that the Examiner's motivation to incorporate "arbitrary fares" as taught by ATPCO with published fares taught by Gardner is that Gardner discloses unpublished fares. The applicant states that this is illogical and that ATPCO clearly sets out that arbitraries are not fares. The applicant then ask why one of ordinary skill in the art would use ATPCO to include arbitraries and thus modify Gardner, which fails to disclose any of these features.

The Examiner disagrees with the applicant's line of reasoning. Gardner discloses (Figures 7a and 7b) fare components, unpublished fares, published fares, and ATPCO rules. The statement made by the Examiner was that Gardner did not disclose arbitraries. However, Gardner does disclose unpublished fares. ATPCO states that an unpublished fare means the combination of an add-on amount and a published fare resulting in an amount used in pricing air transportation from one city to another. Unpublished fares are also referred to as constructed fares. Arbitraries are also referred to as add-on fares or add-ons (ATPCO page 58 and page 1 of applicant's specification). Gardner discloses:

[0096] Fare component identification module 184 identifies possible trip components within an itinerary. This is done by grouping the itinerary segments together in different ways to form possible fare components. Furthermore, fare component identification module 184 prevents illogical components from being generated.

[0097] Trip construction identification module 186 identifies all possible combinations of trip constructions that, when combined, can be used to price all specified travel. This process will produce pricing entities (not shown), each describing a different combination of logical trip constructions that may produce the lowest ticket price.

[0098] For each component identified, pricing services driver 180 typically will seek to determine the unpublished fare for the component.



Thus, in the determination of an unpublished fare, an arbitrary, while not disclosed by Gardner, would be inherent in that an unpublished fare is a combination of an add-on and a published fare amount. Thus, the motivation to combine would be present and the very fact that this provides more choices of destinations for a customer allows for better customer service.

As for applicant's comment that arbitraries are not fares because arbitraries cannot be priced in fare quote systems, the Examiner asserts that an arbitrary is an add-on. This means that it is not to be used as a standalone fare. An arbitrary fare is only published for use in combination with other fares.

Applicant states that applicant's invention is directed to a more efficient technique of producing fare constructions. It appears that applicant is claiming the definitions set out in ATPCO for how to construct a constructed fare. Applicant is claiming determining interior cities that appear with gateways in arbitraries by searching gateway cities corresponding to the interior city (disclosed on page 16 of ATPCO). Applicant admits that an arbitrary, like a published fare list two cities and the cities are ordered, the first being the gateway (page 1 of applicant's specification) and the second being the interior (or minor) city. Therefore, as disclosed in ATPCO, the gateway is searched because the arbitrary edit checks for valid gateways and if the gateway is not in the table, the arbitrary will not edit (page 16 of ATPCO). The step of applying an arbitrary to a published fare to arrive at an unpublished or constructed fare is disclosed in ATPCO (page 58).

**Claims 2 and 23:**

The applicant states that for the purposes of this appeal only, claims 3 and 24 stand or fall together and that claim 3 is representative of this group of claims.

Claim 2 is directed to *wherein determining interior cities comprises:*

*accessing a hash table indexed by an airline, interior-city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city.*

The Examiner notes that the claim language only require that a table be accessed. The claim language only require a table to be obtained, acquired, or read. There is no other positive recitation of anything else being performed on the information in the table once it is accessed. There is no selection process or searching step to take the information from the table and make a list. Thus, unless the table is the list, it is not clear what applicant is claiming in this step other than accessing a table.

Applicant states that Gardner fails to suggest a hash table. Applicant's specification nor drawings provide any meaningful or specific definition of hash table. So without such indication, the Examiner understands the term hash as being defined in the Microsoft Computer Dictionary, 5<sup>th</sup> addition. Hash is used to convert an identifier or key, meaningful to a user, into a value for location of the corresponding data in a structure. Therefore, based on this definition, searching the databases disclosed in Figures 7a and 7b of Gardner to return all possible combinations of trip construction is in fact disclosing this feature [0097]. Gardner discloses databases which store data related to flight schedules for all carriers and a request received triggers identification of

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all possible flight connections, thus disclosing a value for location of corresponding data in a structure, the structure being a database [0047].

Gardner discloses databases that store data related to OAG flight schedules for all carriers [0047] and databases containing published and unpublished fares. The databases can be searched to return all the travel fare components that describe travel between cities list of cities (Figures 7a and 7b and [0095-0104]). The Examiner asserts that searching a database of unpublished fare would return arbitraries. Applicant admits that an arbitrary, like a published fare, list two cites and the cities are ordered, the first being the gateway (page 1 of applicant's specification) and the second being the interior (or minor) city. Therefore, as disclosed in ATPCO, the gateway is searched because the arbitrary edit checks for valid gateways and if the gateway is not in the table, the arbitrary will not edit (page 16 of ATPCO). The step of applying an arbitrary to a published fare to arrive at an unpublished or constructed fare is disclosed in ATPCO (page 58). To construct a fare, one or more arbitrary fare components are combined, in accordance with industry standards for combination, with a published fare component to describe the price for the specified carrier between two cities. ATPCO set the rules as to how fares can be constructed (see applicant's admitted prior art).

ATPCO also discloses accessing construction tables and carriers having the option to control which city pairs they want ATPCO to construct (page 16 of ATPCO). ATPCO discloses a Gateway inquiry that list all arbitrary headline points (page 16).

The applicant states that Gardner does not suggest the preprocessing recited in the base claim 1. Applicant's specification nor drawings provide any meaningful or specific definition of the term preprocessing.

MPEP 2111 requires that claims be given the broadest reasonable interpretation consistent with the supporting description. However, the claim must be interpreted in light of the specification without reading limitations into the claim.

Thus, a broadest reasonable interpretation of the first limitation, preprocessing by determining interior cities that appear with gateway cities in arbitraries, would encompass any form of making a determination. A human determining that Nome, Alaska appears with the gateway city of NYC and the arbitrary would be OME-NYC arbitrary + the NYC-PAR fare (pages 1 and 2 of applicant's specification; also see page 59 of ATPCO where unpublished fares using specified arbitraries are disclosed).

The applicant argues again that Gardner does not disclose fare construction as referred to in applicant's admitted prior art or ATPCO. Gardner discloses (Figures 7a and 7b) fare components, unpublished fares, published fares, and ATPCO rules. Gardner discloses unpublished fares. ATPCO states that an unpublished fare means the combination of an add-on amount and a published fare resulting in an amount used in pricing air transportation from one city to another. Unpublished fares are also referred to as constructed fares. Arbitraries are also referred to as add-on fares or add-ons (ATPCO page 58 and page 1 of applicant's specification). Gardner discloses:

[0096] Fare component identification module 184 identifies possible trip components within an itinerary. This is done by grouping the itinerary segments together in different ways to form possible fare components. Furthermore, fare

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component identification module 184 prevents illogical components from being generated.

[0097] Trip construction identification module 186 identifies all possible combinations of trip constructions that, when combined, can be used to price all specified travel. This process will produce pricing entities (not shown), each describing a different combination of logical trip constructions that may produce the lowest ticket price.

[0098] For each component identified, pricing services driver 180 typically will seek to determine the unpublished fare for the component.

Thus, in the determination of an unpublished fare, an arbitrary, while not disclosed by Gardner, would be inherent in that an unpublished fare is a combination of an add-on and a published fare amount. Thus, Gardner, in view of applicant's admitted prior art and ATPCO, disclose the limitations of claims 2 and 23.

### **Claims 3 and 24**

Applicant states that for purposes of appeal that claims 3 and 24 stand or fall together and that claim 3 is representative of this group of claims.

Claim 3 discloses wherein accessing a hash table returns the list in constant time.

The Examiner notes that a table is presented in claim 2. However, there is no searching step, selection step, or determination step. Therefore, it is unclear how accessing a table would allow a list to be returned in constant time. Is the list the table itself?

Applicant states that Gardner fails to suggest a hash table. Applicant's specification nor drawings provide any meaningful or specific definition of hash table or how the hash tables are formed. So without such indication, the Examiner understands the term hash as being defined in the Microsoft Computer Dictionary, 5<sup>th</sup> addition. Hash is used to convert an identifier or key, meaningful to a user, into a value for location of the corresponding data in a structure. Therefore, based on this definition, the databases disclosed in Gardner in Figures 7a and 7b are in fact disclosing this feature. Gardner discloses databases which store data related to OAG flight schedules for all carriers and a request received triggers identification of all possible flight connections, thus disclosing a value for location of corresponding data in a structure, the structure being a database [0047].

Gardner discloses databases indexed by airlines [0047]. The databases can be searched to return all possible combinations of trip construction [0097]. The Examiner asserts that searching a database of unpublished fare would return arbitraries combined with a published amount. Applicant admits that an arbitrary, like a published fare, list two cities and the cities are ordered, the first being the gateway (page 1 of applicant's specification) and the second being the interior (or minor) city. Therefore, as disclosed in ATPCO, the gateway is searched because the arbitrary edit checks for valid gateways and if the gateway is not in the table, the arbitrary will not edit (page 16 of ATPCO). The step of applying an arbitrary to a published fare to arrive at an unpublished or constructed fare is disclosed in ATPCO (page 58).

ATPCO also discloses accessing construction tables and carriers having the option to control which city pairs they want ATPCO to construct (page 16 of ATPCO). ATPCO discloses a Gateway inquiry that list all arbitrary headline points (page 16).

As for the meaning of the term “constant time”, the applicant’s specification fails to provide any meaningful or specific definition. The Examiner asserts that nothing occurs in constant time or real-time. Anything transmitted over a computer has some type of delay. Therefore, the Examiner asserts that constant time or real-time would define a time frame to process and return data over a computer network in which external constraints affect such transmission. Gardner discloses processing and transmission of data over a computer network in Figures 7a and 7b.

#### **Claims 4-6 and 25-27**

The applicant states that for purposes of appeal only, claims 4-6 and 25-27 stand or fall together.

Claim 4 reads as follows:

The method of claim 1 wherein searching for gateway cities comprises accessing a hash table indexed by an airline, gateway pair to return a list of gateway cities that an airline publishes fares from the determined gateway to another gateway city.

In claim 1, the searching step reads as follows:

searching a database having published fares for gateway cities corresponding to the determined interior cities appearing in the arbitraries.

First, the Examiner notes that the table is only accessed, not searched in claim 4. There is no selection process which returns a list separate from the table that is accessed. Therefore, the Examiner is interpreting the list to be a result from a database search unless the applicant is intending the list to be the table.

Secondly, Gardner discloses searching a database having published fare (Figures 7a and 7b).

Claim 5 reads:

The method of claim 1 wherein determining interior cities comprises:

accessing a first hash table by an airline, interior-city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city; and

wherein searching for gateway cities comprises:

accessing a second hash table by an airline, gateway pair to return a second list of gateway cities that an airline publishes fares from the determined gateway to another gateway city.

The Examiner notes that the claim language only require a table to be accessed. There is no determination, selection, or searching performed in the claim language.

Applicant states that Gardner fails to suggest a hash table. Applicant's specification nor drawings provide any meaningful or specific definition of hash table. So without such indication, the Examiner understands the term hash as being defined in the Microsoft Computer Dictionary, 5<sup>th</sup> addition. Hash is used to convert an identifier or key, meaningful to a user, into a value for location of the corresponding data in a structure. Therefore, based on this definition, searching the databases disclosed in



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Figures 7a and 7b of Gardner to return all possible combinations of trip construction is in fact disclosing this feature [0097]. Gardner discloses databases which store data related to flight schedules for all carriers and a request received triggers identification of all possible flight connections, thus disclosing a value for location of corresponding data in a structure, the structure being a database [0047].

Gardner discloses databases that store data related to OAG flight schedules for all carriers [0047] and databases containing published and unpublished fares. The databases can be searched to return all the travel fare components that describe travel between cities list of cities (Figures 7a and 7b and [0095-0104]). The Examiner asserts that searching a database of unpublished fare would return arbitraries. Applicant admits that an arbitrary, like a published fare, list two cites and the cities are ordered, the first being the gateway (page 1 of applicant's specification) and the second being the interior (or minor) city. Therefore, as disclosed in ATPCO, the gateway is searched because the arbitrary edit checks for valid gateways and if the gateway is not in the table, the arbitrary will not edit (page 16 of ATPCO). The step of applying an arbitrary to a published fare to arrive at an unpublished or constructed fare is disclosed in ATPCO (page 58). To construct a fare, one or more arbitrary fare components are combined, in accordance with industry standards for combination, with a published fare component to describe the price for the specified carrier between two cities. ATPCO set the rules as to how fares can be constructed (see applicant's admitted prior art).

ATPCO also discloses accessing construction tables and carriers having the option to control which city pairs they want ATPCO to construct (page 16 of ATPCO). ATPCO discloses a Gateway inquiry that list all arbitrary headline points (page 16).

As for the step of wherein *searching for gateway cities further comprises:*  
*accessing a second has table indexed by an airline, gateway pair to return a second list of gateway cities that an airline publishes fares from the determined gateway to another gateway city*

The Examiner notes that the table is only accessed, not searched in claim 4. There is no selection process being performed on the table. Secondly, Gardner discloses searching a database having published fare (Figures 7a and 7b).

It is not clear how a determination of interior cites is made by accessing tables. It appears that information is being presented but nothing is being done with the information.

Applicant states that claim 6 is directed to "constant time". As stated above, as for the meaning of the term "constant time", the applicant's specification fails to provide any meaningful or specific definition. The Examiner asserts that nothing occurs in constant time or real-time. Anything transmitted over a computer has some type of delay. Therefore, the Examiner asserts that returning a list after accessing a database in constant time or real-time would define a time frame to process and return data over a computer network in which external constraints affect such transmission. Gardner discloses such processing and transmission of data in a computer network in Figures 7a and 7b.

**Claims 9 and 29**

Applicant states that for purposes of this appeal only, claims 9 and 29 stand or fall together and that claim 9 is representative of this group of claims.

Claim 9 reads as follows:

The method of claim 7 wherein testing entries further comprises:

determining if an entry in a construction table was memoized before accessing the construction table; and

if the entry was memoized, retrieving an answer from a store of memoized entries to apply to the constructed fare.

Claim 7 reads:

The method of claim 1 wherein applying arbitraries further comprises:

evaluating records from fare construction tables to determine whether the constructed fare is a valid constructed fare.

Gardner discloses retrieval and validation modules (Figures 7a and 7b and paragraphs [0095-0104].

Claim 9 reads on claim 7. Claim 9 claims *wherein the testing entries further comprises determine if an entry in a construction table is memorized before accessing the table*. Claim 7 does not disclose any testing.

Memoised is a function that remembers and returns results from a memory rather than recalculating it.

It appears that claim 9 is simply evaluating fares that have calculated and stored and that can be recalled.

Applicant's specification defines the term as follows in paragraph [0047]:

Memoization is a technique for speeding up certain kinds of algorithms. If an expensive procedure is called many times, and if the procedure's output depends only on the input (i.e., the answer is not dependent on any external factors, such as the current time), then memoization can be used. To memoize PO2 retrieval, the PO2 procedure call 80 forms a query 82 involving the constructed fare. The memoization retrieval process 80 has a store 88 of past queries and associated answers. If the memoization retrieval process 80 determines that the query has been stored, it is retrieved from the store 92. Otherwise, a procedure call for the PO2 record is produced and used to access the record from a remote database. The answer from the remote database is stored in the memoization store 88 for future references.

Thus, the Examiner asserts that the fares stored in the databases of Gardner in Figures 7a, 7b and 8a (retrieve fare component) would be memoised.

The applicant states that Gardner does not teach a memorization procedure. However, the applicant is not claiming a memorization procedure in the claim language. The claim language only require that a determination be made as to whether a past query is stored and then retrieving an answer *if* the entry is memoized. If the entry is not memorized, then nothing need be done. Therefore, if, as the applicant contends, Gardner does not disclose a memorized procedure, then a determination that an entry is not memorized would require that nothing be done.

Furthermore, it is not clear what the applicant is defining as the answer that is retrieved. The Examiner is interpreting it to be fare components. It is not clear how the steps of claim 9 further limits claim 7. Claim 7 is directed to applying arbitraries and depends on claim 1. Thus, read in this light, claim 1 has a step of applying an arbitrary corresponding to one of the interior cities to a published fare involving one of the gateway cities that corresponds to the determined interior cities appearing in the

arbitrary to produce a constructed fare. This is disclosed in ATPCO and is, in fact, the definition of a constructed fare. Claim 7 has a step of evaluating records from fare construction tables to determine whether the constructed fare is a valid constructed fare. Gardner discloses a validation process. Claim 9 reads *the method of claim 7 wherein testing entries further comprising the steps of claim 9*. Claim 7 makes no mention of testing. Furthermore, claim 1 does not suggest a testing step. It is not clear how claim 9 would further limit an evaluation process of claim 7 either. It is not clear how retrieving an answer from memorized entries and applying it to the constructed fare further limits claim 7 or claim 1. Claim 1 has the constructed fare already formed. Thus, it is not clear what the applicant is forming in this step. Therefore, the Examiner is interpreting the limitations of claim 9 to be simply retrieving stored constructed fares and asserts that Gardner discloses this in Figures 7a, 7b and 8a.

### **Claims 11 and 32**

The applicant states that for the purpose of this appeal only, claims 11 and 32 stand or fall together with claim 11 being representative of this group of claims.

Claim 11 reads as follows:

The method of claim 1, further comprising:

determining a second set of interior cities that appear with a second gateway city in the published fare for the airline;

applying a second interior city from the second set of interior cities to the constructed fare to produce a three component constructed fare.

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The Examiner interpreted the claim language to be determining an interior city that appears with a gateway and applying the interior city to the constructed fare to produce a three component constructed fare.

Gardner discloses 2 component and 3 component constructed fares [0101].

ATPCO discloses a 3 component constructed fare (page 58). Applicant's admitted prior art discloses the following:

[0003] In the NYC-PAR market there may be hundreds of published fares with corresponding rules to combine the fares. However, there are too many markets for airlines to actually publish fares for every single market. For example, for the OME-NCE (Nome, Alaska/Nice, France) market, there may not be a published fare because the Nome-Nice market may be too small for airlines to actually publish fares. Nevertheless, the airlines need to be able to offer some price for an OME-NCE ticket. The fare construction process solves this problem by providing a mechanism to "extend" a published fare with add-ons also called arbitraries, in order to derive prices to minor cities. An arbitrary, like a published fare, lists two cities. However, unlike cities in a published fare (which establish a bidirectional market), the cities in an arbitrary are ordered: the first is the gateway (or major) city, and the second is the interior (or minor) city. Constructed fares can be either two-component constructed fares, i.e., one arbitrary combined with one published fare or three-component constructed fares, i.e., two arbitraries combined with one published fare. Examples of two-component constructed fares include

OME-NYC arbitrary+NYC-PAR fare=OME-PAR fare

NYC-PAR fare+PAR-NCE arbitrary=NYC-NCE fare

[0004] As the examples show, the arbitrary can be added to either end of the published fare. A three-component constructed fare is shown below, where arbitraries are added to both sides of the published fare

OME-NYC arbitrary+NYC-PAR fare+PAR-NCE arbitrary=OME-NCE fare

Applicant states that while applicant's admitted prior art and ATPCO clearly disclose extending a published fare with an arbitrary, it is clear that neither applicant's

admitted prior art nor ATPCO determine a second set of interior cities that appear with a second gateway city in the published fare.

The Examiner respectfully disagrees with this assertion.

The applicant's claim language only requires a determination to be made wherein there are two interior cities and two gateway cities. OME and NCE are the two interior cities and NYC and PAR are the two gateway cities. The claim language does not require the determination to be made by a processor in a computer. As stated above, the applicant has not defined the term preprocessing in the specification. Thus, the Examiner asserts any method of making a determination would fulfill the claim language and would be considered to be a one step in preprocessing. Furthermore, applying an arbitrary that extends the published fare to a city from a second set of interior cities to produce a three component constructed fare is disclosed above:

OME-NYC arbitrary+NYC-PAR fare+PAR-NCE arbitrary=OME-NCE fare

### **Claims 12 and 33**

Applicant states that for purposes of this appeal only, claim 12 and 33 stand or fall together and that claim 12 is representative of this group of claims.

Claim 12 reads as follows:

The method of claim 1 wherein the method is performed over all determined interior cities and all gateways.

Applicant states that while applicant concedes that the prior art construction technique would publish a listing of constructed fares, applicant contends that to the extent that any purported combination of Gardner with applicant's admitted prior art and

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ATPCO use all possible minor cities and gateway cities to produce plural constructed fares, the prior art fails to perform the method over all determined interior cities and all gateway cities that correspond to the determined interior cities appearing in arbitraries.

When looking at claim 12 in light of claim 1, a determination of interior cities that appear with gateway cities in arbitraries for an airline wherein the method is performed over all determined interior cities and all gateway cities that correspond to the determined interior cities only requires that the method be performed over all determined cities in claim 1. Thus, if an airline is determined to have only one interior combined with one gateway in claim 1, then the method need not be performed again as set forth in claim 12. Furthermore, Gardner discloses trip construction identification module 186 identifying all possible combinations of trip construction [0095-0096]. Moreover, ATPCO discloses unpublished fares using specified arbitraries wherein AA currently has on file 69 different fares from NYC to LON, 58 add-ons between NYC-RIC and 15 add-ons between LON-ABZ (page 59), thus providing multiple gateway cities that correspond to the determined interior cities.

**Claims 14, 15, 35, 43-46**

Applicant states that for purposes of this appeal only, claims 14, 15, 35, and 43-46 stand or fall together and that claim 35 is representative of this group of claims.



Claim 35 reads as follows:

A computer program product for producing a set of constructed international fares for an airline, the computer program product residing on a computer readable medium and comprising instructions that cause a computer to:

determine interior cities that appear with gateway cities in arbitraries for the airline;

search for gateway cities corresponding to the determined interior cities appearing in the arbitraries; and

apply each arbitrary corresponding to each of the determined interior cities to published fares involving the gateway cities to produce the set of constructed fares.

Applicant states that claim 35 is specifically directed to producing international constructed fares for a particular airline. The Examiner asserts, absent the applicant identifying the term international differently, that in applicant's admitted prior art, the example of a fare component from NYC to Paris would be an international fare.

Furthermore, ATPCO discloses international fare construction (page 9 (1), page 13 A (1), page 16 page 40).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that applicant's fare construction process includes a process that produces "constructed fares" in a computational efficient manner and that because of the efficiency of the algorithm the fare construction process can produce constructed fares on an "as needed basis" using the most current information such as currency

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conversion factors, prices, fares, and fare construction tables) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim 35 contains the same limitations as claim 1.

Thus, the Examiner interprets claim 35 in the following manner:

Gardner discloses a computer program product for producing a set of constructed international fares for an airline, the computer program product residing on a computer readable medium and comprising instructions that cause a computer to:

perprocessing data by:

determining interior (minor) cities that appear with gateway (major, HUB) cities in arbitraries for an airline, the fares being published amounts and an order set of two cites that extend published fares that include an amount for travel between two cities to provide a bi-directional market (page 1 of the applicant's specification, Figure 7 of Gardner, Unpublished Fare Retrieval, Published Fare Retrieval, page 7, [0093-0102]); also, see page 16 of ATPCO City pair inquiry) and

searching a database having published fares for gateway (major, HUB) cities corresponding to the determine interior (minor) cities appearing in the fares (Gardner Figure 7b – 8a, page 7 [0095-0097]), also see ATPCO Gateway inquiries; and

producing the constructed fare (Fig. 8a), page 7 [0097], by:

applying a fare corresponding to one of the interior (minor) cities to a published fare involving one of the gateway (major, HUB) cities that corresponds to the

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determined interior (minor) cities appearing in the fares to produce a constructed fare (page 7 [0095-0098], also, see ATPCO definition of an arbitrary and constructed fare, page 58); and

storing the constructed fare in memory or the persistent storage device of the computer system for use in a travel related activity (pages 7 and 8, [0093-0104], Fig. 8a).

Gardner discloses searching databases for Published and Unpublished Fares.

As stated above, a published fare is defined as an amount published for use in pricing air transportation from one city to another city (See ATPCO Principle of Fare Construction and applicant's specification, pages 1-2).

An arbitrary is defined as an amount published for use only in combination with other fares for the construction of through fares. An arbitrary is also called an add-on fare (See ATPCO Principle of Fare Construction and applicant's specification, pages 1-2).

An unpublished fare is a combination of an add-on amount and a published fare amount resulting in an amount used in pricing air transportation from one city to another city. Unpublished fares are also referred to as "through fares," constructed fares," and "behind point fare". Unpublished fares are constructed as follows (see ATPCO Principle of Fare Construction and applicant's specification pages 1-2):

Add-on + published fare = unpublished fare

Published fare + add-on = unpublished fare

Add-on + published fare + add-on = unpublished fare

The applicant's specification states that a gateway is a major city and an interior city is a minor city (page 1).

Figure 7a of Gardner discloses Unpublished Fares (214), Unpub Fare Rtrv/Val (194), ATPCo Rule (216) Published Rule Rtrvl./Val. (196), Unpub Rule Rtrv/Val. (198), and Unpub Rules (218).

Figure 7b discloses Fare Component Identification – create groups of possible fare components; retrieval of all possible unpublished fare components; published and unpublished fare retrieval.

Gardner further discloses the following:

[0096] Fare component identification module 184 identifies possible trip components within an itinerary. **This is done by grouping the itinerary segments together in different ways to form possible fare components.** Furthermore, fare component identification module 184 prevents illogical components from being generated.

[0097] Trip construction identification module 186 **identifies all possible combinations of trip constructions that, when combined,** can be used to price all specified travel. This process will produce pricing entities (not shown), each describing a different combination of logical trip constructions that may produce the lowest ticket price.

[0100] The process continues by calling published footnote retrieval and validation module 190. This module will apply footnote restriction against the travel dates. Furthermore, the process will call published routings retrieval and validation module b192 to apply routings restrictions against the itinerary. After this process is completed, **an array of published fares is returned.**

Gardner discloses searching databases for published fares and unpublished fares. A published fare is defined in APTCO as an amount published for use in pricing air transportation from one city to another city. An unpublished fare is the combination of an add-on amount and a published fare amount resulting in an amount used in

pricing air transportation from one city to another city. Unpublished fares are also referred to as "through fares," "constructed fares" and "behind point fares." page 58 of ATPCO. The Examiner asserts that Gardner does not explicitly disclose arbitrary fares.

However, ATPCO discloses arbitrary fares as an amount published for use only in combination with other fares for the construction of through fares, also referred to as "proportional fare," "basing fare" or "add-on fare (page 58)." ATPCO also discloses add-ons or arbitrary fares as being bidirectional and that the first city displayed is the gateway (page 60). ATPCO further discloses add-on plus published fare equals unpublished or constructed fares (page 58). Applicant discloses in the specification that the cities in an arbitrary are ordered, the first is the gateway (or major) city, and the second is the interior (or minor) city (page 1 of the specification). Thus, the Examiner asserts that determining interior cities that appear with gateway cities in arbitraries would be looking for the gateway cities that are listed with the interior cities and searching a database would be an add-on inquiry as disclosed in ATPCO (page 60 (D)).

ATPCO further discloses a gateway inquiry (page 16) in which it is disclosed that every carrier, regardless whether they construct, has to have the gateway table current because the arbitrary edit checks for valid gateways. If it is not in the table, the arbitrary will not edit.

Applicant's background in the specification (page 2) states that:

[0006] One approach used to fare construction is to use a list of constructed fares called "The Unpublished Fares Product" that is available from Airline Tariff Publishing Company (ATPCO). ATPCO is an intermediary that maintains fares published by airlines and resellers. With "The Unpublished Fares Product" a cross-product of all arbitraries and all base fares is determined and provided into a list. That list can contain millions of constructed fares.

Thus, Gardner in combination with applicant's admitted prior art and ATPCO disclose the limitation of claim 35.

### **Claims 16 and 37**

Applicant states that for purposed of this appeal only, claim 16 and 37 stand or fall together and that claim 37 is representative of this group of claims.

Claim 37 reads as follows:

The computer program product of claim 35 further comprising instructions that cause a computer to:

determine a second set of interior cities that appear with second gateway cities in the published fares.

Applicant's admitted prior art disclose a second interior city that appears with a second gateway city in the published fares.

[0003] In the NYC-PAR market there may be hundreds of published fares with corresponding rules to combine the fares. However, there are too many markets for airlines to actually publish fares for every single market. For example, for the OME-NCE (Nome, Alaska/Nice, France) market, there may not be a published fare because the Nome-Nice market may be too small for airlines to actually publish fares. Nevertheless, the airlines need to be able to offer some price for an OME-NCE ticket. The fare construction process solves this problem by providing a mechanism to "extend" a published fare with add-ons also called arbitraries, in order to derive prices to minor cities. An arbitrary, like a published fare, lists two cities. However, unlike cities in a published fare (which establish a bidirectional market), the cities in an arbitrary are ordered: the first is the gateway (or major) city, and the second is the interior (or minor) city. Constructed fares can be either two-component constructed fares, i.e., one arbitrary combined with one published fare or three-component constructed fares, i.e., two arbitraries combined with one published fare. Examples of two-component constructed fares include

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OME-NYC arbitrary+NYC-PAR fare=OME-PAR fare

NYC-PAR fare+PAR-NCE arbitrary=NYC-NCE fare

[0004] As the examples show, the arbitrary can be added to either end of the published fare. A three-component constructed fare is shown below, where arbitraries are added to both sides of the published fare

OME-NYC arbitrary+NYC-PAR fare+PAR-NCE arbitrary=OME-NCE fare

If OME is the first interior city and NYC is the first gateway city, then NCE would be a second interior city and PAR would be the second gateway. Thus, Gardner in view of ATPCO and applicant's admitted prior art do disclose a second set of interior cities that appear with second gateway cities in the published fares. Gardner and ATPCO discloses 2 component fares and 3 component fares and Gardner and ATPCO disclose computers processing the fares (ATPCO page 58 and Gardner ([0101])

### **Claims 17 and 38**

Applicant states that for purposes of this appeal only, claims 17 and 38 stand or fall together and that claim 38 is representative of this group of claims.

Claim 38 reads as follows:

The computer program product of claim 36 wherein the set of constructed fares is a first set of constructed fares, and the computer program product further comprises instructions that cause a computer to:

apply each arbitrary corresponding to each of the determined second set of interior cities to the first set of constructed fares to produce a second set of constructed fares.

Claim 36 reads:

The computer program product of claim 35 wherein the set of constructed fares are two component constructed fares.

Applicant argues that no combination of references suggest to apply each arbitrary corresponding to each of the determined second set of interior cities to the first set of constructed fares to produce a second set of constructed fares.

Neither claim 36 nor claim 35 have any recitation of a second set of interior cities. Furthermore, claim 36 states that the set of constructed fares are two component constructed fares.

Thus, the Examiner is interpreting the claim language to be applying an arbitrary corresponding to each of the determined interior cities to the published fares to create constructed fares.

Gardner discloses constructed fares (Figures 7a and 7b) and 2 component constructed fares [0101]. ATPCO discloses constructed fares and 2 component constructed fares (page 58). Applicant's admitted prior art discloses constructed fares and 2 component constructed fares (pages 1-2).

Examiner notes that applicant admits that ATPCO and applicant's admitted prior art clearly discuss extending a published fare with an arbitrary.

#### **Claims 20 and 41**

Applicant states that for the purposes of this appeal only, claims 20 and 41 stand or fall together and claim 41 is representative of this group of claims.



Claim 41 reads as follows:

The computer program product of claim 40 wherein instructions that cause a computer to evaluate entries further comprises instructions that cause a computer to:

determine if an entry in a fare construction table was memoized before accessing the fare construction table; and

if the entry was memoized, retrieve an answer from a store of memoized entries to apply to the constructed fare.

Claim 40 reads:

The computer program product of claim 35 further comprising instructions that cause a computer to:

evaluate entries in fare construction tables to determine whether constructed fares in the set of constructed fares are valid constructed fares; and

return the valid constructed fares as the set of constructed fares.

First, the Examiner notes that claim 35 makes no mention of fare construction tables. Second, Gardner discloses a validation process (Figures 7a and 7b) and [0095-0104].

As stated above, memoised is a function that remembers and returns results from a memory rather than recalculating it.

It appears that claim 41 is simply evaluating fares that have calculated and stored and that can be recalled.

Thus, the Examiner asserts that the fares stored in the databases of Gardner in Figures 7a, 7b and 8a (retrieve fare component) would be memoised.

The claim language only require that a determination be made as to whether a past entry is stored and then retrieving an answer *if* the entry is memoized. If the entry is not memorized, then nothing need be done. Therefore, if, as the applicant contends, Gardner does not disclose a memorized procedure, then a determination that an entry is not memorized would require that nothing be done.

Furthermore, it is not clear what the applicant is defining as the answer that is retrieved. The Examiner is interpreting it to be fare components. It is not clear how the steps of claim 41 further limits claim 40. Claim 40 is evaluating entries in fare construction tables to determine whether constructed fares in the set of constructed fares are valid constructed fares and then returning the valid constructed fares as the set of constructed fares. As stated above, Gardner discloses a validation process. Claim 41 reads the computer program product of claim 40, wherein instructions that cause a computer to evaluate entries further comprises instructions that cause a computer to determine if an entry in a fare construction table is memorized before accessing the fare construction table. It is not clear how claim 41 would further limit an evaluation process of claim 40. It is not clear how retrieving an answer from memorized entries and applying it to the constructed fare further limits claim 40 or claim 35. How does determining if a fare construction table was memorized before accessing the fare construction table evaluate entries in the tables to determine if they are valid? Thus, it is not clear what the applicant is forming in this step. Therefore, the Examiner is interpreting the limitations of claim 41 to be simply retrieving stored constructed fares and asserts that Gardner discloses this in Figures 7a, 7b and 8a.

**Claims 21 and 42**

Applicant states that for purposed of this appeal only, claims 21 and 42 stand or fall together and that 42 is representative of this group of claims.

Claims 42 reads as follows:

The computer program product of claim 35 wherein instructions that cause a computer to determine interior cities comprises instructions that cause a computer to: access a first hash table by an airline, interior-city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city; and

wherein instructions that cause a computer to search for gateway cities comprises instructions that cause a computer to:

access a second hash table by an airline, gateway pair to return a second list of gateway cities that an airline publishes fares from the determined gateway to another gateway city.

The applicant argues that indexing of the hash tables enables this feature to return the list of gateway cities for which an airline has arbitraries that specify the interior city. Applicant states that in particular, this permits the fare construction process to produce the fares efficiently and the process that produces the hash tables can run in a time proportional to the number of entries. Applicant goes on to state that once the hash tables have been produced, they only need to be modified during the fare construction process if there is a change in arbitraries or gateway cities.

The Examiner notes that the claim language only require a table to be accessed. There are no hash tables being produced or modified or used to produce fares.

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It is noted that the features upon which applicant relies to describe the claim limitations are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant states that Gardner fails to suggest a hash table. Applicant's specification nor drawings provide any meaningful or specific definition of hash table. So without such indication, the Examiner understands the term hash as being defined in the Microsoft Computer Dictionary, 5<sup>th</sup> addition. Hash is used to convert an identifier or key, meaningful to a user, into a value for location of the corresponding data in a structure. Therefore, based on this definition, the searching the databases disclosed on Figures 7a and 7b and retrieving all possible combinations of trip construction is in fact disclosing this feature.

Gardner discloses databases indexed by airlines [0047]. The databases can be searched (Figures 7a and 7b). The Examiner asserts that searching a database of unpublished fare would return arbitraries. Applicant admits that an arbitrary, like a published fare, list two cites and the cities are ordered, the first being the gateway (page 1 of applicant's specification) and the second being the interior (or minor) city. Therefore, as disclosed in ATPCO, the gateway is searched because the arbitrary edit checks for valid gateways and if the gateway is not in the table, the arbitrary will not edit (page 16 of ATPCO). The step of applying an arbitrary to a published fare to arrive at an unpublished or constructed fare is disclosed in ATPCO (page 58).

ATPCO also discloses accessing construction tables and carriers having the option to control which city pairs they want ATPCO to construct (page 16 of ATPCO). ATPCO discloses a Gateway inquiry that list all arbitrary headline points (page 16).

The Examiner notes that the table is only accessed, not searched in claim 42. There is no selection process by which the list is constructed. It is not clear how a determination of interior cities is made by accessing tables.

It appears that information from the table is being presented but nothing is being done with the information. Thus, the Examiner interprets this to be searching a database for possible combinations of trip constructions.

#### **Claims 52, 53, and 55**

Applicant states that for the purposes of appeal only, claims 52, 53 and 55 stand or fall together and that claim 52 is representative of this group of claims.

Claim 52 reads as follows:

A method of producing a set of constructed international fares for an airline, the method executed in a computer system and the method comprising:

preprocessing by:

accessing a first hash table structure stored in computer memory by airline interior city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city, with arbitraries being published amounts and an ordered set of two cities that extend published fares to the gateway city from interior cities that include an amount for travel between two cities to provide a bi-directional market;

accessing a second hash table structure stored in computer memory by airline gateway pair to return a second list of gateway cities that an airline publishes fares from to determine a gateway to another gateway city;

producing constructed fares by:

applying the first arbitraries from the first hash table to the published fares from the second hash table to return a list of potential constructed fares;

determining whether a constructed fare in a list of constructed fares is a valid constructed fare and for valid ones of the potential constructed fares producing the constructed fares; and

storing the constructed fares in a computer memory or persistent storage for use in a travel related activity.

Applicant states that claim 52 is specifically directed to producing international constructed fares for a particular airline. The Examiner asserts, absent the applicant identifying the term international differently, that in applicant's admitted prior art, the example of a fare component from NYC to Paris would be an international fare.

Furthermore, ATPCO discloses international fare construction (page 9 (1), page 13 A (1), page 16 page 40).

Applicant states that claim 52 includes preprocessing by **accessing** a first hash table structure stored in computer memory by airline interior city pair to return a list of gateway cities for which the airline has arbitraries.

The Examiner notes that the claim language only require that a table be accessed. The claim language only require a table be obtained, acquired, or read. No active step of selecting or retrieving arbitraries is being performed in claim 52.

Applicant states that Gardner fails to suggest a hash table. As stated above, applicant's specification nor drawings provide any meaningful or specific definition of hash table. So without such indication, the Examiner understands the term hash as being defined in the Microsoft Computer Dictionary, 5<sup>th</sup> edition. Hash is used to convert an identifier or key, meaningful to a user, into a value for location of the corresponding data in a structure. Therefore, based on this definition, the searching the databases to retrieve all possible combinations disclosed on Figures 7a and 7b is in fact disclosing this feature.

Gardner discloses databases indexed by airlines [0047]. The databases can be searched (Figures 7a and 7b). The Examiner asserts that searching a database of unpublished fare would return arbitraries. Applicant admits that an arbitrary, like a published fare, list two cities and the cities are ordered, the first being the gateway (page 1 of applicant's specification) and the second being the interior (or minor) city. Therefore, as disclosed in ATPCO, the gateway is searched because the arbitrary edit checks for valid gateways and if the gateway is not in the table, the arbitrary will not edit (page 16 of ATPCO). The step of applying an arbitrary to a published fare to arrive at an unpublished or constructed fare is disclosed in ATPCO (page 58).

ATPCO also discloses accessing construction tables and carriers having the option to control which city pairs they want ATPCO to construct (page 16 of ATPCO). ATPCO discloses a Gateway inquiry that list all arbitrary headline points (page 16).

The applicant states that Gardner does not suggest the preprocessing recited in the base claim 1. Applicant's specification nor drawings provide any meaningful or specific definition of the term preprocessing.

MPEP 2111 requires that claims be given the broadest reasonable interpretation consistent with the supporting description. However, the claim must be interpreted in light of the specification without reading limitations into the claim.

Thus, a broadest reasonable interpretation of the first limitation, preprocessing by accessing a hash table does not require anything be returned.

Gardner discloses (Figures 7a and 7b) fare components, unpublished fares, published fares, and ATPCO rules. Gardner discloses unpublished fares. ATPCO states that an unpublished fare is the combination of an add-on amount (arbitrary) and a published fare resulting in an amount used in pricing air transportation from one city to another. Unpublished fares are also referred to as constructed fares. Arbitraries are also referred to as add-on fares or add-ons (ATPCO page 58 and page 1 of applicant's specification). Gardner discloses:

[0096] Fare component identification module 184 identifies possible trip components within an itinerary. This is done by grouping the itinerary segments together in different ways to form possible fare components. Furthermore, fare component identification module 184 prevents illogical components from being generated.

[0097] Trip construction identification module 186 identifies all possible combinations of trip constructions that, when combined, can be used to price all



specified travel. This process will produce pricing entities (not shown), each describing a different combination of logical trip constructions that may produce the lowest ticket price.

[0098] For each component identified, pricing services driver 180 typically will seek to determine the unpublished fare for the component.

Thus, in the determination of an unpublished fare, an arbitrary, while not disclosed by Gardner, would be inherent in that an unpublished fare is a combination of an add-on and a published fare amount. Gardner discloses determining whether a constructed fare is valid and storing the constructed fares in a computer memory or persistent storage (Figures 7a and 7b and [0095-0104]) Thus, Gardner, in view of applicant's admitted prior art and ATPCO, disclose the limitations of claim 52.

Applicant states that while ATPCO and applicant's admitted prior art clearly disclose applying arbitraries to gateways to produce constructed fares, the claimed technique of applying the first arbitraries from the first hash table to the published fares from the second hash table to return a list of potential constructed fares is not suggested nor enabled by these references. The Examiner once again directs the applicant to the claim language wherein applicant only accesses the tables. There is no active step of searching or making a determination of what gateway cites have arbitraries that specify the interior city or forming any list.

#### **Claim 54**

Applicant states that claim 54 further limits claim 52 by including a second set of interior cities that appear as arbitraries with the second gateway cities by accessing a

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third has table by airline interior city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city.

Claim 54 reads as follows:

The method of claim 52 further comprising:

determining a second set of interior cities that appear as arbitraries with the second gateway cities by accessing a third hash table by airline interior city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city; and

applying the arbitraries corresponding to the determined second set of interior cities to the first set of constructed fares to produce a second set of constructed fares.

The Examiner notes that applicant again has only provided that the determination process be made by simply accessing a table, not searching or selecting data.

Gardner discloses 2 component and 3 component constructed fares [0101].

ATPCO discloses a 3 component constructed fare (page 58). Applicant's admitted prior art discloses the following:

[0003] In the NYC-PAR market there may be hundreds of published fares with corresponding rules to combine the fares. However, there are too many markets for airlines to actually publish fares for every single market. For example, for the OME-NCE (Nome, Alaska/Nice, France) market, there may not be a published fare because the Nome-Nice market may be too small for airlines to actually publish fares. Nevertheless, the airlines need to be able to offer some price for an OME-NCE ticket. The fare construction process solves this problem by providing a mechanism to "extend" a published fare with add-ons also called arbitraries, in order to derive prices to minor cities. An arbitrary, like a published fare, lists two cities. However, unlike cities in a published fare (which establish a bidirectional market), the cities in an arbitrary are ordered: the first is the gateway (or major) city, and the second is the interior (or minor) city. Constructed fares can be either two-component constructed fares, i.e., one arbitrary combined with one published fare or

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three-component constructed fares, i.e., two arbitraries combined with one published fare. Examples of two-component constructed fares include

OME-NYC arbitrary+NYC-PAR fare=OME-PAR fare

NYC-PAR fare+PAR-NCE arbitrary=NYC-NCE fare

[0004] As the examples show, the arbitrary can be added to either end of the published fare. A three-component constructed fare is shown below, where arbitraries are added to both sides of the published fare

OME-NYC arbitrary+NYC-PAR fare+PAR-NCE arbitrary=OME-NCE fare

Applicant states that while applicant's admitted prior art and ATPCO clearly disclose extending a published fare with an arbitrary, it is clear that neither applicant's admitted prior art nor ATPCO determine a second set of interior cities that appear with a second gateway city in the published fare.

The Examiner respectfully disagrees with this assertion.

The applicant's claim language only requires a determination to be made wherein there are two interior cities and two gateway cities. OME and NCE are the two interior cities and NYC and PAR are the two gateway cities. The claim language does not require the determination to be made by a processor in a computer. As stated above, the applicant has not defined the term preprocessing in the specification. Thus, the Examiner asserts any method of making a determination would fulfill the claim language and would be considered to one step in preprocessing. Furthermore, applying an arbitrary that extends the published fare to a city from a second set of interior cities to produce a three component constructed fare is disclosed above:

OME-NYC arbitrary+NYC-PAR fare+PAR-NCE arbitrary=OME-NCE fare

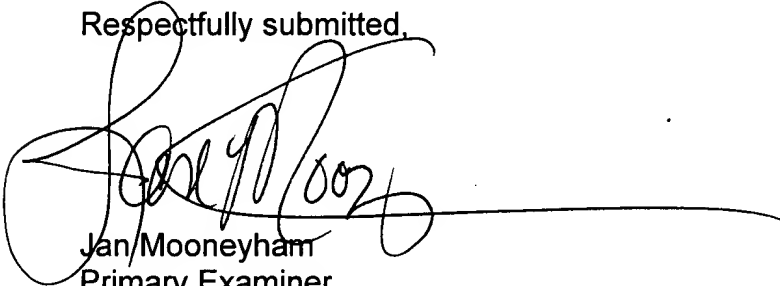
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**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Jan Mooneyham  
Primary Examiner  
Art Unit 3629

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